

WHAT IS CLAIMED IS:

1 1. A virtualization controller which is connected to
2 one or a plurality of storages and one or a plurality
3 of host computers, comprising a plurality of ports
4 connected to one or both of said host computer and said
5 storage, and one or a plurality of storage controllers,
6 wherein,
7 each of said ports and said storage controllers
8 comprises a virtualization processor which holds
9 corresponding information between first
10 identification information and second identification
11 information, the first identification information
12 being used for said host computer to access a storage
13 area held by said storage, and said second
14 identification being used for said virtualization
15 controller to identify said storage area, converts
16 based on said corresponding information the data
17 having the first identification information received
18 from the host computer into the data having the second
19 identification information, transfers the data thus
20 converted to a storage having said storage area,
21 converts the data having the second identification
22 information received from said storage into the data
23 having the first identification information, and

24 transfers the data thus converted to said host
25 computer,
26 said virtualization processor further
27 including,
28 access path management information which
29 registers a first port controlled by said host computer,
30 a second port connected to said storage, and said
31 virtualization processor, as an access path for each
32 storage area of said storage, and
33 when a request for changing said access path is
34 received, said access path management information is
35 updated, and data send/receive control is carried out
36 between the host computer and the storage area of the
37 storage by use of a new access path.

1 2. A virtualization controller, according to claim 1,
2 further comprising,
3 a third port which is connected to a management
4 server, wherein,
5 said access path management information is
6 updated upon receipt of a change request as to the
7 access path received from said management server via
8 said third port, and the data send/receive control is
9 carried out between said host computer and the storage
10 area in said storage, by use of a new access path.

1 3. A virtualization controller, according to claim 1,
2 further comprising,
3 a third port which is connected to a management
4 server, wherein,
5 schedule information is held as control
6 information regarding an access path change received
7 from said management server via said third port,
8 said access path management information is
9 updated based on the schedule information, and
10 the data send/receive control between said host
11 computer and the storage area of said storage is
12 carried out by use of a new access path.

1 4. A virtualization controller, according to claim 1,
2 further comprising,
3 a third port which is connected to a management
4 server, wherein,
5 management information by access type is held as
6 control information regarding an access path change
7 received from said management server via said third
8 port,
9 a type of individual access request by storage
10 area of said storage is determined,
11 said type of access request is held and managed
12 as access history management information by storage

13 area,

14 said access path management information is
15 updated based on said management information by said
16 access type and said access history management
17 information, and

18 the data send/receive control is carried out
19 between said host computer and the storage area of said
20 storage by use of a new access path.

1 5. A virtualization controller, according to claim 1,
2 further comprising,

3 a third port which is connected to a management
4 server, wherein,

5 a threshold of usage rate of each module
6 constituting said virtualization controller is held,
7 which is control information regarding an access path
8 change from said management server, received via said
9 third port,

10 a usage status of each module constituting said
11 virtualization controller is monitored,

12 said threshold is compared with said usage status,
13 and at a timing when said usage status goes over said
14 threshold, said access path management information is
15 updated, and

16 the data send/receive control between said host

17 computer and the storage area of said storage is
18 carried out by use of a new access path.

1 6. A virtualization controller, according to claim 1,
2 wherein,
3 information whether or not each of said storage
4 area of said storage is subjected to a virtualization
5 process is held as virtualization processing control
6 information, and
7 a control is made to execute said virtualization
8 process with respect to each of said storage area
9 included in said plurality of storages, based on said
10 virtualization processing control information.

1 7. An access path control method which executes a
2 change process of data identification information sent
3 and received between a host computer and a storage,
4 and further executes a conversion process of said
5 identification information allocated to a storage area
6 and carries out access path switching, comprising:
7 a step which detects a start-up timing of a
8 switching process of the virtualization processor
9 allocated with respect to each storage area held by
10 said storage,
11 a step which monitors a processing status of an

12 access request issued to said storage area which is
13 a target for the switching process of said
14 virtualization processor,

15 a step which temporarily queues said access
16 request to the storage area which is a target for the
17 switching process, newly received from said host
18 computer, when incomplete access request exists, or
19 which issues an instruction for changing the
20 virtualization processor, to each of the modules which
21 constitute the virtualization controller and relate
22 to the switching process of said virtualization
23 processor, when the incomplete access request does not
24 exist, and

25 a step which issues said access request thus
26 queued to a new virtualization processor, at a timing
27 when a completion report as to the instruction for
28 changing said virtualization processor is received.

1 8. A computer system in which one or a plurality of
2 storages, one or a plurality of host computers, and
3 a virtualization controller are connected, wherein,
4 said virtualization controller comprises a
5 plurality of ports connected to one or both of said
6 host computer and said storage, and one or a plurality
7 of storage controllers, wherein,

8 each of said ports and said storage controllers
9 comprises a virtualization processor which holds
10 corresponding information between first
11 identification information and second identification
12 information, the first identification information
13 being used for said host computer to access a storage
14 area held by said storage, and said second
15 identification being used for said virtualization
16 controller to identify said storage area, converts
17 based on said corresponding information the data
18 having the first identification information received
19 from the host computer into the data having the second
20 identification information, transfers the data thus
21 converted to a storage having said storage area,
22 converts the data having the second identification
23 information received from said storage into the data
24 having the first identification information, and
25 transfers the data thus converted to the host computer,
26 said virtualization controller further
27 including,
28 access path management information which
29 registers a first port connected to said host computer,
30 a second port connected to said storage, and said
31 virtualization processor, as an access path for each
32 storage area of said storage, and
33 when a request for changing said access path is

34 received, said access path management information is
35 updated, and data send/receive control is carried out
36 between the host computer and the storage area of the
37 storage by use of a new access path.